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Humane Trapping Program
Annual Report 1989/90

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HUMANE TRAPPING PROGRAM
ANNUAL REPORT
1989-90

by

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Manager, Wildlife Section

Second printing, September 1990

Contents

Introduction 1

Priorities and objectives 2

Methods 3

  Olsen et al's cumulative scoring system 3

Trap research results 4

  Arctic fox 4

  Marten 4

  Long-tailed weasel 5

  Raccoon 5

  Lynx 5

  Trap testing, manufacture and safety 5

Fisher release program 7

Publications 8

  Refereed publications 8

  Non-refereed publications 8

  Reports 8

Conferences/public relations/visits and meetings 9

  Conferences 9

  Public relations 9
    Humane trapping program 9
    Fisher release program 9

  Visits and meetings 10

Highlights 11

Revenue and expenditure 13

Professional and technical staff 14

Acknowledgments 15

  Steering committee 15

  FIC's research and conservation committee 15

  Animal care committee 15

  Technical committee 15

  Pathological services 15

  Lynx project 15

  Animal procurement 15

  Inventors/manufacturers 15

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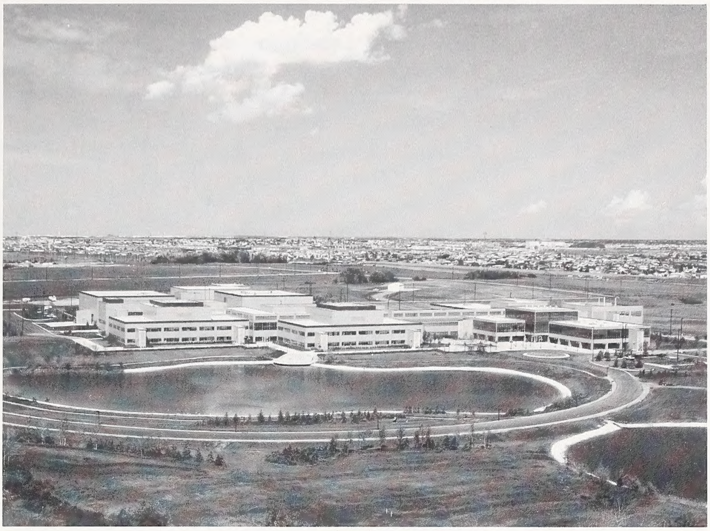
Introduction



The perceived cruelty associated with trapping has been a source of continuous controversy and criticism in Canada since the 1940s. The suffering of animals usually is the rallying point around which many organizations place their banners. With growing societal concern regarding the treatment of wildlife, the federal, provincial and territorial authorities now recognize the need for "humane" trap research. However, during the last 30 years, several humane trapping research programs have been ongoing, including efforts by the Canadian Wildlife Service, the National Research Council, the Federation of Humane Societies, the Federal Provincial Committee for Humane Trapping, and others aimed at developing trapping devices that quickly kill furbearers. The first concrete developments occurred with the creation of the Fur Institute of Canada (FIC)-Alberta Environmental Centre (AEC) Research Team which operated from 1985 to 1989. Building on previous work, the FIC-AEC Research Team assessed an array of killing traps and successfully developed four humane killing traps for marten, mink, and fisher.

In 1989, the Fur Institute of Canada contracted the Alberta Research Council to develop "humane", quick-killing, and live-holding traps for the capture of furbearers. The following sections in this report review the progress of the Wildlife Section of the Forestry Department. Research priorities were determined by FIC's Research and Conservation Committee. Research funds were provided by the Fur Institute of Canada, Environment Canada, International Fur Trade Federation , Alberta Fish and Wildlife, Alberta Agriculture, and Alberta Research Council.

Priorities and objectives

Priority	Objectives
Research & Development	
1. Arctic Fox	• Compare the mechanical characteristics of three rotating-jaw traps (standard Conibear 220, modified Conibear 220, and Sauvageau 2001-8 traps). • Develop one trigger system that will properly position the animals (i.e. in the head-neck region) in one selected rotating-jaw trap for one particular set. • Assess the ability of at least one rotating-jaw trap to "humanely" kill arctic fox. • Assess/develop a trigger system that will properly position the animals (i.e.in the head-neck region) in the Kania trap for arctic fox (AFK trap). • Assess the ability of the trap to "humanely" kill arctic fox.
2. Marten	• Assess the mechanical characteristics of the Sauvageau 2001-5 trap. • Assess the ability of the Sauvageau 2001-5 trap to "humanely" kill the animals. • Assess the mechanical characteristics of the Kania trap manufactured by the Stoney Creek Indian Reserve (Vanderhoof, B.C.). • Assess the ability of the Kania trap to "humanely" kill the animals.
3. Long-Tailed Weasel	• Assess the ability of the Paziuk trap to consistently strike long-tailed weasels in the thoracic region. • Assess the ability of the Paziuk trap to "humanely" kill the animals.
4. Raccoon	• Assess and compare the mechanical characteristics of the live-holding EGG and Softcatch No. 1-1/2 traps. • Assess and compare the type and rated magnitude of limb injuries of raccoons held in these devices for 12 hours. • Assess and compare the type and rated magnitude of limb injuries of raccoons in these devices for 24 hours (if the traps successfully passed the 12-hour capture period).
5. Lynx	• Assess the mechanical characteristics of the live-holding No. 3 padded and unpadded foothold traps. • Assess the limb injuries of lynxes held for less than 24 hours and over 24 hours in these foothold traps.
6. Trap testing, manufacture & safety	• Mechanically evaluate trapping devices submitted by the FIC's Research and Conservation Committee • Determine the life expectancy of rotating-jaw traps (Conibear 220). • Improve the design of the Bionic trap for the manufacture of prototypes. • Help transfer humane trapping technology to the industry. • Investigate the possibility of developing trap safety devices.
Ecological Study	
1. Fisher Release Program	• To establish a productive population of fishers in central Alberta and to learn more about the ecology of the species.
Analysis of Data	
1. FIC-AEC data **2. ARC data**	• To analyze and publish research data.

Methods

The mechanical evaluation of traps was carried out at the wildlife laboratory of the Alberta Research Council in Mill Woods. It involved the determination of average trap momentum and clamping forces at diverse openings. These values were plotted on specific kill threshold graphs reported by the Canadian General Standards Board. According to their position on the threshold graphs, traps were rejected or recommended for further testing.

Most animal-based studies were conducted in simulated natural environments at the Vegreville research compound. Killing traps recommended for field testing were those which successfully passed the following steps:

Approach tests: to assess the potential of traps (wired in a set position so as not to cause injury) to properly strike animals on a consistent basis. *Required number of successful tests:* 5/6.

Pre-selection tests: to assess the potential of traps to "humanely" kill animals immobilized with ketamine HCl. *Required number of successful tests:* 5/6

Kill tests: to assess the potential of traps to "humanely" kill unanaesthetized animals. *Required number of successful tests:* 5/6

Performance confirmation tests: additional kill tests in order to be 95% confident that a trap can be expected to "humanely" kill more than 79% of all captured animals on traplines. *Required number of successful tests:* 9/9, or 13/14.

In order to qualify for each category of testing, a trap must have passed the previous category. A "humane" death was one in which an animal suffered minimal distress. It was achieved by rendering animals irreversibly unconscious and insensitive to pain as rapidly as possible. A maximum 3 minute time period to reach irreversible unconsciousness was used as a guideline.

There are no standards for live-holding devices. In this research program, traps were rated according to a cumulative scoring system, i.e. point scores were assigned to limb injuries. A trapping device was judged "humane" if the cumulative injuries caused to animals rated below 50 points in 9/9 or 13/14 animals. If a trap was found "humane" after a 12-hour capture period, it was further tested in a 24-hour capture period.

The testing of No. 3 padded and unpadded foothold traps for lynx occurred on five Yukon traplines, from November, 1989 to February, 1990. It involved professional trappers accompanied with wildlife technicians. Both traps were used in similar sets under similar environmental conditions. They were equipped with monitoring clocks (to determine when the animal was captured) and a 60 cm-long chain attached to a tree or a toggle buried in the snow.

Olsen et al's cumulative scoring system

(Olsen, G.H., R. G. Linscombe, V. L. Wright, and R. A. Holmes. 1988. Reducing injuries to terrestrial furbearers by using padded foothold traps. Wildlife Society Bulletin 16:303-307).

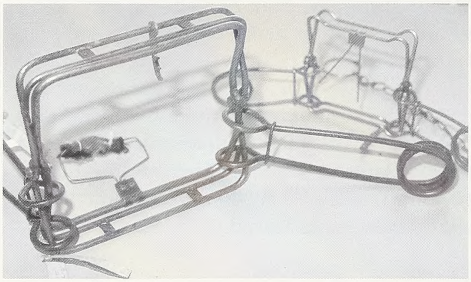
Description of Injury	**Points Scored**
Apparently normal	0
Edematous swelling and hemorrhage	5
Cutaneous laceration less than 2 cm	5
Cutaneous laceration over 2 cm	10
Tendon or ligament laceration	20
Joint subluxation	30
Joint luxation	50
Compression fracture above or below carpus	30
Simple fracture at or below tarsus	50
Compound fracture at or below carpus or tarsus	75
Amputation of digits	
– 1 digit	50
– 2 digits	100
– 3 digits	150
– 4-5 digits	200
Amputation above digits	400

Trap research results

Arctic fox

A total of 25 pups were received from Eskimo Point, NWT, in August 1989.

The Sauvageau 2001-8 trap was selected as a potential rotating-jaw killing device because it generated high energies (average momentum: 2.0972 kg.m/sec; range of clamping forces: 261 to 585 N), was not overtly dangerous to handle, and was already manufactured in Canada. The trap was tested from December, 1989 to February 1990.



Approach tests first involved a trap with a baited two-prong trigger, set on the top of a post driven in frozen ground (set recommended by Mr. Russ Hall, NWT). The trap failed to properly position arctic foxes which either retreated too quickly at firing time or approached the trap sideways. After several tests, a portable cubby made of mesh wire was developed around the post to eliminate side approaches and to entice the animals further into the trap. With an offset baited trigger made of two short prongs, the trap successfully passed the approach tests. In the pre-selection tests, the same animals were placed into the trap in a position that duplicated placement in the approach tests. They all irreversibly lost consciousness within 3 minutes.

The trap successfully rendered 9/9 arctic foxes struck in the head-neck region irreversibly unconscious within 3 minutes. On the basis of the compound research work, the Sauvageau 2001-8 trap can be expected to render more than 79% of arctic foxes captured on traplines irreversibly unconscious within 3 minutes. It is now recommended for field testing.

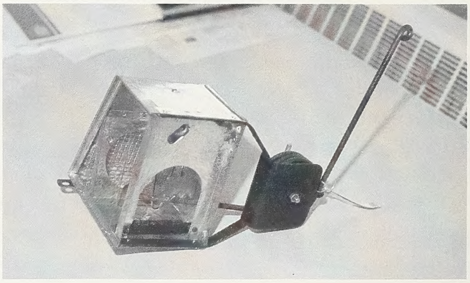
The AFK trap successfully passed the approach tests. In the pre-selection tests, it failed to render two of three arctic foxes irreversibly unconscious within 3 minutes.

Marten

The Sauvageau 2001-5 trap, although slightly less powerful than the C120 Magnum trap, rated above the marten kill threshold line. Kill tests with traps equipped with a pitchfork trigger were carried out from December 1989 to January 1990. The trap failed to render two of 14 martens irreversibly unconscious within 3 minutes.

The Kania trap with modifications similar to those recommended by the FIC-AEC Research Team also rated above the marten kill thereshold line. It was equipped with a modified prong trigger and was tested in January 1990. Thirteen of 14 martens were rendered irreversibly unconscious within 3 minutes.

This study indicated that the Kania trap can be expected to render more than 79% of martens captured on traplines unconscious within 3 minutes. The trap is now recommended for field testing.



Long-tailed weasel

Because the prairie long-tailed weasel is a threatened species in Western Canada, the FIC's Research and Conservation Committee cancelled the study. However, in April, 1990, a few approach tests were carried out with three animals that had already been captured.

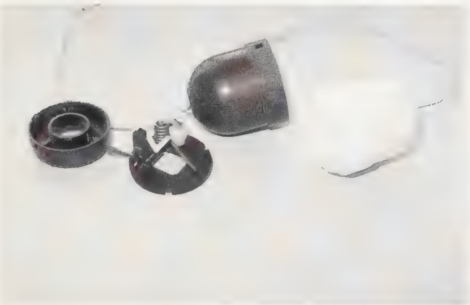
Three approach tests with the original Paziuk trap and three approaches with a modified trigger failed to properly position long-tailed weasels (i.e. in the thoracic region) .

Three more approaches were carried out with the C120 Magnum equipped with a pan trigger for mink. The weasels entered the trap and ate the bait without firing it. These tests suggested that the C120 Magnum set for mink is selective against the long-tailed weasel.

Raccoon

The EGG trap successfully held 9/9 raccoons without major injury during both the 12- and 24-hour capture periods. A great deal of data on the behavior of raccoon were gathered and await analysis. However, this study indicated that the EGG trap can be expected to hold more than 79% of raccoons captured on traplines without serious injury. It is now recommended for field testing.

The No. 1-1/2 Softcatch successfully held 9/9 raccoons without serious injury during the 12-hour capture period. However, the trap failed during the 24-hour series because two of 10 animals mutilated themselves.



Lynx

A total of 165 animals were captured. At the time of writing this report, field data were being compiled and autopsies of the limbs were initiated. Field observations suggest that the No. 3 padded foothold trap is less injurious than the steel foothold trap. On the other hand, this may not be true when the animals are kept captive for long periods of time. Because of the large sample size, it will be possible to determine the magnitude of limb injuries of lynxes held for less than 24 hours and over 24 hours.

The average interval of time between the setting of a trap and the capture of an animal will also be estimated. This information will be useful for the management of lynx traplines.

Trap testing, manufacture and safety

A total of 19 trap models (usually 3 traps per model) were submitted to the ARC's widllife laboratory for mechanical evaluation. These are:

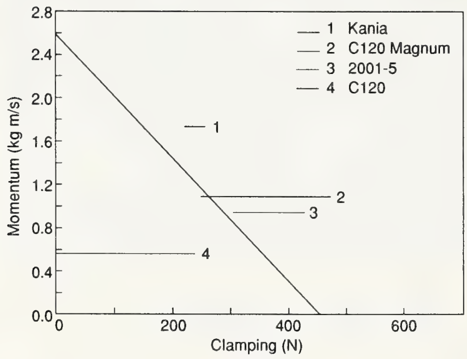
1. Sauvageau 2001-5 – generation I
2. Sauvageau 2001-5 – generation II
3. Sauvegeau 2001-5 – generation III
4. Sauvageau 2001-8
5. Modified Conibear 330
6. Luke trap
7. Indian Kania – generation I
8. Indian Kania – generation II
9. No. 3 Steel Foothold
10. No. 3 Padded Foothold – weak springs
11. No. 3 Padded Foothold – standard springs

12. No. 1-1/2 Softcatch
13. EGG
14. C120 Magnum manufactured by Mr. Sauvageau
15. Larabie's C120 Magnum
16. Modified Conibear 120
17. Kania's trap for arctic fox (AFK)
18. Modified Conibear 280 (2 clamping bars)
19. Modified Conibear 280 (4 clamping bars)

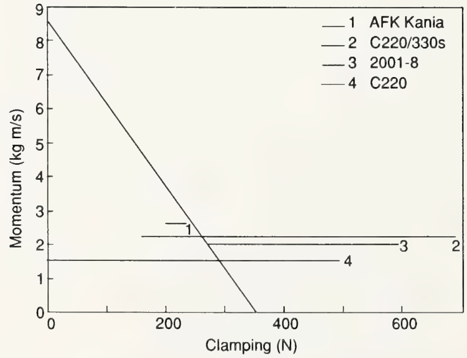
Furthermore, the spring cocking forces of four trap models were determined:

1. Conibear 120
2. C120 Magnum
3. Sauvageau 2001-5 (generation III)
4. Sauvageau's C120 Magnum

A study of the life expectancy of the Conibear 220 trap was continued (30 traps involved).



Mink/Marten Kill Threshold



Fisher/Raccoon Kill Threshold

The Wildlife Section spent considerable time discussing the manufacture of the Sauvageau 2001-5 and the C120 Magnum produced by Mr. Marcel Sauvageau (Que.). The major issues addressed were the construction of the frames, the safety hooks, the cocking force of the springs, and the overall production. These efforts resulted in the production of a C120 Magnum with the characteristics identified by the FIC-AEC Research Team. The Alberta Research Council also directed the manufacture problems to the Centre de Recherche Industrielle du Quebec. CRIQ worked with Mr. Sauvageau at recovering the costs related to the production of the C120 Magnum, and developing and improving the manufacture process.

The Wildlife Section subcontracted Anderson Associates Consulting Engineers Inc., an Edmonton firm, to redesign the Bionic trap. A manufacturer was also identified for the manufacture of prototypes in 1990.

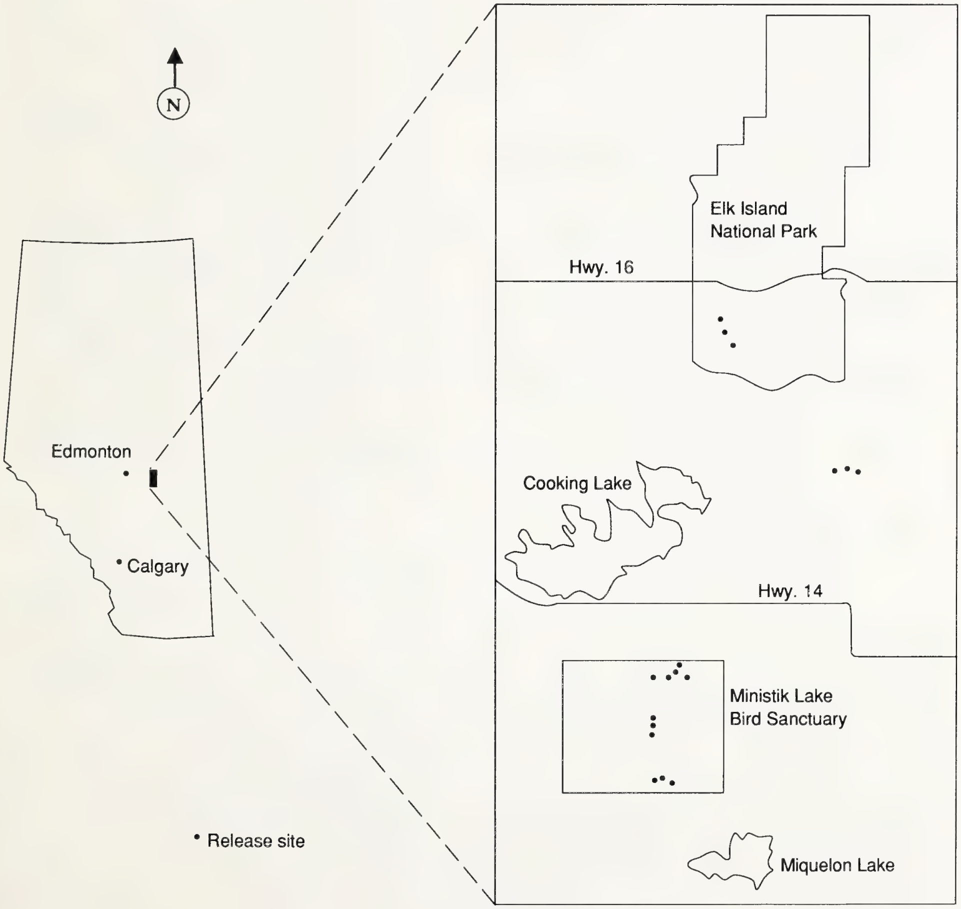
The Wildlife Section investigated the possibility of developing safety devices for traps. Two inventions to safely set rotating-jaw traps were found and are now recommended for testing next year. The Wildlife Section intends to develop one of them to free any trapper caught in a trap.

Finally, Mr. P. Williams, Head of the Forestry Department, and the Wildlife Section participated actively in the review and development of humane trap standards in Canada.

Fisher release program

Seventeen radio-collared fishers were released between March and June, 1990 in the Elk Island National Park–Blackfoot Recreation Area– Ministik Lake Bird Sanctuary complex in central Alberta. The immediate post-release behavior and movements of these animals were recorded and videotaped during and after their breeding season. Through regular monitoring and field investigations, their daily activities, intra- and inter- specific relationships, and the characteristics of their home range were documented.

Although this study still is in its initial stages, enough information has been obtained to improve future fisher release programs. Fisher activities vary greatly from one individual to another as well as seasonally. Until now, fisher home ranges have consisted of disconnected areas, often deciduous woodlots of diverse sizes interconnected by extensive travel routes. The fishers under study did not restrict their activities to areas with continuous forest cover and seemed to prefer a mosaic of forest stands, agricultural lands, and water areas. Fisher movements did not seem to be affected by the proximity of urban areas. Overall, it appears that fishers have a good chance of reestablishing themselves in the Parklands of Alberta.



Fisher release sites

Publications

Refereed publications

Barrett, M. W., G. Proulx, D. Hobson, D. Nelson, and J. W. Nolan. 1989. Field evaluation of the C120 Magnum trap for marten. Wildlife Society Bulletin 17:294-298.

Barrett, M. W., et al. 1990. Field evaluation of the C120 Magnum trap for mink: Under Review.

Proulx, G., and M. W. Barrett. 1989. Animal welfare concerns and wildlife trapping: ethics standards and committments. Transactions of the Western Section of the Wildlife Society 25: 1-6. (Note: This paper was the winner of the Nelson-Hooper Award for best technical presentation at the 1989 annual meeting of the Western Section of the Wildlife Society).

Proulx, G. and M. W. Barrett. 1990. Assessment of power snares to effectively kill red fox. Wildlife Society Bulletin 18:27-30.

Proulx, G. and M. W. Barrett . 1990. The C120 Magnum with pan trigger: a humane trap for mink (*Mustela vison*). Journal of Wildlife Diseases: In Press.

Proulx, G. and M. W. Barrett. 1990. Evaluation of the Bionic trap to quickly kill mink (*Mustela vison*) in simulated natural environments. Submitted to the Journal of Wildlife Diseases.

Proulx, G., M. W. Barrett, and S. R. Cook. 1989. The C120 Magnum: an effective quick-kill trap for marten. Wildlife Society Bulletin 17:294-298.

Non-refereed publications

Proulx, G. 1989. Humane traps: the search continues. Alberta Trapper Magazine, Nov. Issue: 12-13.

Proulx, G. 1990. On the development of quick-killing traps. Abstract. Northwest Fur Symposium, Apr. 18-19, 1990, Cranbrook, B.C.

Reports

Drescher, R. 1989. Mechanical evaluation of the Sauvageau 2001-5 trap. Unpubl. Rep., Alberta Research Council, 19 pp.

Drescher, R. 1990. Mechanical evaluation of the commercially produced Sauvageau 2001-5 trap. Unpubl. Rep., Alberta Research Council, 12 pp.

Drescher, R. 1990. Mechanical evaluation of the Sauvageau 2001-8 trap. Unpubl. Rep., Alberta Research Council, 15 pp.

Drescher, R. 1990. Mechanical evaluation of the Woodstream modified Conibear 330 trap. Unpubl. Rep., Alberta Research Council, 13 pp.

Drescher, R. 1990. Mechanical evaluation of the German Luke 11/89 trap. Unpubl. Rep., Alberta Research Council, 10 pp.

Drescher, R. 1990. Mechanical evaluation of the modified Woodstream Conibear 280 trap. Unpubl. Rep., Alberta Research Council, 21 pp.

Drescher, R. 1990. Mechanical evaluation of the C120-ARC 90-8 trap. Unpubl. Rep., Alberta Research Council, 15 pp.

Drescher, R. 1990. Mechanical evaluation of the Woodstream No. 3 leghold trap: Softcatch and steeljaw. Unpubl. Rep., Alberta Research Council, 25 pp.

Drescher,R. 1990. Mechanical evaluation of the AFK trap. Unpubl. Rep., Alberta Research Council, 7 pp.

Drescher, R. 1990. Mechanical evaluation of the Woodstream No. 1-1/2 Softcatch. Unpubl. Rep., Alberta Research Council, 10 pp.

Drescher, R. 1990. Mechanical evaluation of the Egg trap-ARC 90-2. Unpubl. Rep., Alberta Research Council, 14 pp.

Drescher, R. 1990. Mechanical evaluation of the C120 Magnum prototype – ARC90-12. Unpubl. Rep., Alberta Research Council, 15 pp.

Drescher, R. 1990. Mechanical evaluation of the Kaniaplate (P2) trap. Unpubl. Rep., Alberta Research Council, 15 pp.

Drescher, R. 1990. Mechanical evaluation of the C120 Magnum prototype - ARC90-7. Unpubl. Rep., Alberta Research Council, 8 pp.

Drescher, R. 1990. Mechanical evaluation of the C120 Magnum prototype - ARC90-6. Unpubl. Rep., Alberta Research Council, 16 pp.

Drescher, R. 1990. Mechanical evaluation of the C120 Magnum prototype - ARC90-10. Unpubl. Rep., Alberta Research Council, 7 pp.

Conferences/public relations/visits and meetings

Conferences

Proulx, G. – "Notes on the husbandry of marten and fisher". Alberta Fur Ranchers, Edmonton, Alberta, 27 Oct., 1989, Alberta Agriculture, Longman Building.

Proulx, G. – "Update on humane trap research". Sundree Trapper Assoc., Dec. 14, 1989, Sundree, Alberta.

Proulx, G. – "Humane trapping and animals rights". 1st Annual Meeting of the Alberta Chapter of the Wildlife Society, Jan. 19-20, 1990, Red Deer, Alberta.

Proulx, G. – "Update on killer trap technology". Midwest Furbearer Workshop, Mar. 26-29, 1990, Aurora, Nebraska.

Proulx, G. – "On the development of quick-killing traps". Northwest Fur Symposium, Apr. 18-19, Cranbrook, B.C.

Proulx, G. – " Update on humane trapping". Alberta Agriculture, District Representatives. May 9, 1990, Vegreville, Alberta.

Public relations

Humane trapping program

Dec. '89: Interview by CBC 704 AM
Interview by Alberta Report (Magazine)
Jan. '90: Interview by CISN-FM 104
Feb. '90: Interview by CBC 704 AM
Interview by Edmonton Journal
Mar. '90: Newscast by CFRN-TV

Fisher release program

Mar. '90: Newscast by CFRN-TV
Interview by K97 - FM
Interview by Edmonton Journal
Apr. '90: Newscast by CFRN-TV
Jun. '90: Newscast by CBC-TV
Newscast by CFRN-TV
Interview by CBC 704 AM

Visits and meetings

September 1989

Meeting of the Humane Trapping Steering Committee, Edmonton, Alberta.

Meeting of the Research and Conservation Committee, Edmonton, Alberta.

Visit of Mr. John F. Doble, British Consul General, to the Vegreville research compound.

Visit of the Animal Care Committee to the Vegreville research compound.

Meeting of the Alberta Fur Council, Red Deer, Alberta. (Dr. Proulx is a member of the Board of Directors).

October 1989

Visit of the Technical Committee to the Vegreville research compound.

Meeting with Edmonton Mayor Jan Reimer regarding the humane trapping program.

November 1989

Visit of ARC research facilities by Mr. Luke, German inventor.

December 1989

Meeting of the Research and Conservation Committee, Winnipeg, Manitoba.

February 1990

Visit of ARC research facilities by European representatives. Tour organized by Indigenous Survival International.

March 1990

Meeting of the Humane Trapping Committee for Standards, Winnipeg, Manitoba.

Meeting of the Humane Trapping Steering Committee, Edmonton, Alberta.

Meeting of the Research and Conservation Committee. Edmonton, Alberta.

April 1990

Meeting of the Alberta Fur Council

Meeting of the Animal Care Committee

May 1990

Meeting of the Research and Conservation Committee, Toronto, Ontario.

Meeting to assess the research needs of the fur industry, Toronto, Ontario. Organized by FIC.

Highlights

Priority	Objectives	Results
1. Arctic Fox	• Mechanical evaluation of 3 trap models	Completed
	• Development of a trigger system for a rotating-jaw trap	Completed
	• Tests with one rotating-jaw trap	Completed **"Humane" trap: Sauvageau 2001-8**
	• Approach tests with AFK trap	Completed
	• Pre-selection tests with AFK trap	Completed – Trap failed
2. Marten	• Mechanical evaluation of Sauvageau 2001-5 trap	Completed
	• Kill tests with the Sauvageau 2001-5 trap	Completed Trap failed
	• Mechanical evaluation of Indian Kania trap	Completed
	• Kill tests with the Kania trap	Completed **"Humane" trap: Kania**
3. Long-tailedweasel (Study cancelled by FIC)	• Approach tests with the Paziuk trap	Completed Trap failed
4. Raccoon	• Mechanical evaluation of the EGG and Softcatch (No. 1-1/2) traps	Completed
	• Assess injuries caused by the EGG trap (12- and 24-hour capture period)	Completed **"Humane" trap: EGG**
	• Assess injuries caused by the Softcatch No. 1-1/2 (12- and 24-hour capture period)	Completed. The trap failed the 24-hour capture period.
5. Lynx	• Mechanical evaluation of No. 3 padded and unpadded foothold traps	Completed
	• Field test both traps	Completed
6. Trap testing, manufacture and safety	• Mechanical evaluation of traps identified by FIC	Completed A total of 19 traps were tested
	• Life expectancy of traps	Completed the 2nd year of testing
	• Improve the design of the Bionic trap	In progress
	• Help transfer technology to industry	Completed: the C120 Magnum with pitchfork trigger
	• Investigate the development of safety devices	Completed

Priority	Objectives	Results
7. Fisher release program	• To establish a population in central Alberta	Completed the release Ecological study in progress.
8- Research data	• To analyze and publish	7 papers, 16 reports 6 conferences, and 13 media interviews.
9- Auxiliary work		Approach tests with the C120 Magnum and long-tailed weasel. Release of 12 surplus martens back to their original habitat. Participation in the review and development of trap standards. Large number of visits and meetings.

Revenue and expenditure

Fur Institute of Canada's Contribution

	Budget	Actual[1]
Manpower	$ 455,626	$ 418,072
Supplies and Services	119,374	115,691
Fixed Assets	15,000	53,542
Total	$ 590,000	$ 587,305

Other Contributions[2]

	Budget	Actual
Alberta Fish and Wildlife Division	$ 75,000	$ 75,000
Alberta Research Council	$ 100,000	$ 100,000
Alberta Agriculture	Free pathological services	

Lynx Project[3]

	Budget	Actual
Manpower	$ 36,000	$ 35,853
Trapper Honoraria	9,600	12,242
Travel	5,000	1,475
Supplies and Rentals	38,600	33,212
Freight	500	3,071
	$ 89,700	$ 85,853

1. Based on an estimate of $ 50,000 for manpower and $10,000 for services and supplies for the month of June.
2. All contributions to be spent exclusively on the Humane Trapping Program.
3. Funds managed by Mr. Harvey Jessup, Project Field Coordinator.

Professional and technical staff

Head, Forestry Department: P. C. Williams , M.Sc. (Aston)

Administrative Assistant : L. E. Cardwell

Manager, Wildlife Section: G. Proulx, Ph.D.(Guelph)

Head Technologist: A. J. Kolenosky, Bio Sci (NAIT)

Technologists:
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P. J. Cole, Bio Sci (NAIT)
R. K. Drescher, Renewable Res Mgmt (Lethbridge)
K. Seidel, Bio Sci (NAIT)

Secretary: P. S. Grey

Acknowledgments

The following people contributed to the 1989-90 Humane Trapping Program:

Steering committee

Dr. R. J. Fessenden, *Alberta Research Council*
H. Jessup, *Fur Institute of Canada/Gvt. of Yukon*
D. Gladders, *Fur Institute of Canada*
Dr. T. L. Church. *Alberta Agriculture*
N. Jotham, *Environment Canada*
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D. McCrea, *Trapper*

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Technical committee

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Dr. M. W. Barrett, *Alberta Environmental Centre*

Pathological services

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Lynx project

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R. Rivard, *Gvt. of Yukon*
H. Slama, *Gvt. of Yukon*
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J. Hofer, *Yukon trapper*
K. Hougen, *Yukon trapper*
A. Johns, *Yukon trapper*
D. Lange, *Yukon trapper*
E. Oles, *Yukon trapper*

Animal procurement

A. Arnold
E. Bott
O. Casper
F. Dehrens
B. Forest
G. Gustavson
B. Hansen
E. Henderson
D. Hinkey
L. King
B. Kurceba
C. Makowecki
L. Nolan
P. Paziuk
D. Rodtka
G. Sawchuk
W. Tarkowski
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